

2036709

April 5, 2004

Lockheed Martin Corporation  
West Coast Project Office  
2550 N. Hollywood Way, 3<sup>rd</sup> Floor  
Burbank, California 91505

Attention:	Mr. Tom D. Blackman Technical Project Manager	Telephone 562.951.2000
Subject:	Plume Characterization Annual Sampling Program - 2003 Crafton-Redlands Plume Project	Facsimile 562.951.2100

Dear Mr. Blackman:

This report summarizes the analytical results from the Annual Sampling Program. The Annual Sampling Program began on July 28, 2003 and was completed on August 1, 2003.

The Annual Sampling Program is part of the *Redlands Groundwater Monitoring Plan* that was prepared in response to the Regional Water Quality Control Board (RWQCB) issued Cleanup and Abatement Order 94-37 to Lockheed Martin. The monitoring plan consists of sampling production wells as part of the Water Supply Contingency Plan (WSCP), and an annual and biennial sampling program.

A total of five multi-port wells with 40 sample ports, plus three standard single completion monitoring wells were sampled. A list of wells sampled under the Annual Sampling Program is provided in Table 1; well locations are shown on Figures 1 and 2. The wells sampled under the Annual Sampling Program are analyzed for volatile organic compounds (VOCs) using EPA method 601/602, and for perchlorate using EPA method 314.0.

The August 2003 Water Supply Contingency Plan (WSCP) sampling results are also included in this report as Table 4. The WSCP program includes 58 wells and 6 water system pipeline sampling points. The WSCP sample points are sampled for VOCs using



EPA method 502.2, and/or perchlorate using EPA method 314.0 either on a monthly, alternate months or semiannual basis.

## METHODOLOGY

A summary of the procedures and protocols that were used during the annual sampling program are outlined below and detailed in the referenced documents. Groundwater samples were collected in accordance with the State of California Regional Water Quality Control Board – Los Angeles Region (LARWQCB) Well Investigation Program (WIP) standards.

- A groundwater sample was collected from a production well or a single-screen monitoring well when field parameters were stable and/or a minimum of three casing volumes of groundwater had been removed from the well. Field parameter measurements of pH, specific conductivity, temperature, dissolved oxygen, redox and turbidity were recorded.
- For the Westbay multi-port wells (LMW-1, LMW-2, LMW-3, LMW-6 and LMW-7), the samples were collected using a Westbay sampling tool – only one set of field parameter data was obtained for these samples. Field parameter measurements are summarized in Table 3.
- Groundwater samples from monitoring wells were collected using a low-flow purge pump. Groundwater samples from multi-port wells were collected with specialized equipment that fit into each sampling port.
- Samples were labeled and stored at approximately 4<sup>0</sup>C in insulated coolers with containerized ice pending transfer to the project laboratory. A minimum of 10 percent of the total samples obtained were collected as QA/QC duplicate samples. Trip blanks and equipment blanks were also prepared where appropriate. A total of 4 duplicate samples, 10 trip blanks and 5 equipment blanks were collected as part of the annual sampling program.
- All field data were recorded on appropriate field forms including Purging/Sampling Forms and Westbay Instrument field forms. Other field-related data not recorded on the Purging/Sampling Forms were recorded in a field notebook. Log entries in the field notebook were completed in accordance with WIP procedures. The field forms are available upon request.
- All collected samples were submitted under chain of custody to Del Mar Analytical in Irvine, California. Del Mar analyzed submitted samples for VOCs and perchlorate utilizing EPA methods 601/602 and 314.0, respectively.

## RESULTS

The analytical results for the Annual Sampling Event for TCE and perchlorate are shown on Figures 1 and 2, respectively, and are also presented on Table 2. The water sampling field forms are provided in Attachment A. Chain-of-custody, laboratory data sheets, and Level III laboratory quality assurance/quality control (QA/QC) documentation are provided in Attachment B, and are available upon request.

A total of 5 multi-port wells with 40 combined sample ports and 3 single completions wells were sampled as part of the Annual Sampling Program, therefore a total of 43 distinct sample locations were sampled.

TCE concentrations ranged from not detected in 19 sample locations, to 25 micrograms per liter (ug/L) in LMW-1, Port 7 (480' bgs).

Perchlorate concentrations ranged from not detected in 12 sample locations, to 100 ug/L in LMW-1, Port 7 (480' bgs).

## CLOSING

Earth Tech greatly appreciates being of continued service to Lockheed Martin Corporation on this project. Should you have any questions or comments, please do not hesitate to call.

Sincerely,  
Earth Tech



Peter Bokor, P.E.  
Program Director



Matthew Werner, R.G., C.E.G., C.H.  
Project Manager

## TABLES

TABLE 1  
ANNUAL SAMPLING PROGRAM  
SAMPLE IDENTIFICATIONS

Lockheed Martin Well Designation	Well Name	Sample Date	Sample Time	Sample Number Identification	Analyzed for VOCs	Analyzed for Perchlorate
<b>Lockheed Martin Multiport Monitoring Wells</b>						
2720	LMW-1, Port 1 (120)	NS	NS	NS	NO	NO
2721	LMW-1, Port 2 (170)	7/28/2003	11:55	AS-1	YES	YES
2722	LMW-1, Port 3 (220)	7/28/2003	13:10	AS-2	YES	YES
2723	LMW-1, Port 4 (285)	7/28/2003	13:40	AS-3	YES	YES
2724	LMW-1, Port 5 (340)	7/28/2003	14:00	AS-4	YES	YES
2725	LMW-1, Port 6 (410)	7/28/2003	14:35	AS-6	YES	YES
2726	LMW-1, Port 7 (480)	7/28/2003	15:05	AS-7	YES	YES
2726	LMW-1, Port 7 (480) Duplicate	7/28/2003	15:10	AS-8	YES	YES
2727	LMW-1, Port 8 (530)	7/28/2003	16:00	AS-9	YES	YES
2728	LMW-1, Port 9 (610)	7/28/2003	16:30	AS-10	YES	YES
2729	LMW-1, Port 10 (700)	7/28/2003	17:00	AS-11	YES	YES
2730	LMW-2, Port 1 (125)	NS	NS	NS	NO	NO
2731	LMW-2, Port 2 (180)	7/29/2003	16:10	AS-22	YES	YES
2732	LMW-2, Port 3 (215)	7/29/2003	16:35	AS-23	YES	YES
2733	LMW-2, Port 4 (280)	7/29/2003	16:55	AS-24	YES	YES
2734	LMW-2, Port 5 (350)	7/30/2003	9:20	AS-25	YES	YES
2735	LMW-2, Port 6 (995)	7/30/2003	9:50	AS-26	YES	YES
2736	LMW-2, Port 7 (485)	7/30/2003	10:15	AS-27	YES	YES
2737	LMW-2, Port 8 (555)	7/30/2003	10:50	AS-28	YES	YES
2738	LMW-2, Port 9 (595)	7/30/2003	11:25	AS-29	YES	YES
2981	LMW-3, Port 1 (155)	7/29/2003	10:05	AS-12	YES	YES
2982	LMW-3, Port 2 (230)	7/29/2003	10:30	AS-13	YES	YES
2983	LMW-3, Port 3 (300)	7/29/2003	10:55	AS-14	YES	YES
2984	LMW-3, Port 4 (355)	7/29/2003	11:15	AS-15	YES	YES
2985	LMW-3, Port 5 (440)	7/29/2003	11:50	AS-17	YES	YES
2986	LMW-3, Port 6 (495)	7/29/2003	12:20	AS-18	YES	YES
2987	LMW-3, Port 7 (585)	7/29/2003	12:50	AS-19	YES	YES
2987	LMW-3, Port 7 (585) Duplicate	7/29/2003	13:00	AS-20	YES	YES
2988	LMW-3, Port 8 (640)	7/29/2003	13:50	AS-21	YES	YES
2990	LMW-6, Port 1 (175)	7/30/2003	13:10	AS-30	YES	YES
2991	LMW-6, Port 2 (230)	7/30/2003	13:35	AS-31	YES	YES
2991	LMW-6, Port 2 (230) Duplicate	7/30/2003	13:40	AS-32	YES	YES
2992	LMW-6, Port 3 (300)	7/30/2003	14:05	AS-33	YES	YES
2993	LMW-6, Port 4 (385)	7/30/2003	14:40	AS-35	YES	YES
2994	LMW-6, Port 5 (545)	7/30/2003	15:15	AS-36	YES	YES
2995	LMW-6, Port 6 (625)	7/30/2003	15:50	AS-37	YES	YES
2997	LMW-7, Port 1 (105)	NS	NS	NS	NO	NO
2998	LMW-7, Port 2 (260)	7/31/2003	9:45	AS-38	YES	YES
2999	LMW-7, Port 3 (355)	7/31/2003	10:15	AS-39	YES	YES
3000	LMW-7, Port 4 (425)	7/31/2003	10:45	AS-40	YES	YES
3001	LMW-7, Port 5 (515)	7/31/2003	11:20	AS-41	YES	YES
3001	LMW-7, Port 5 (515) Duplicate	7/31/2003	11:25	AS-42	YES	YES
3002	LMW-7, Port 6 (600)	7/31/2003	12:00	AS-43	YES	YES
3003	LMW-7, Port 7 (670)	7/31/2003	12:40	AS-45	YES	YES
<b>Lockheed Martin Piezometers</b>						
3086	LMP-1	8/1/2003	12:30	AS-46	YES	YES
3087	LMP-2	8/1/2003	17:35	AS-47	YES	YES
3089	LMP-3	8/1/2003	18:55	AS-49	YES	YES

TABLE 2

ANNUAL SAMPLING PROGRAM  
ANALYTICAL RESULTS

Lockheed Martin Well Designation	Well Name	VOC	TCE Result	PCE Result	cis-1,2-DCE	1,1-DCE	Toluene	Xylenes	BDCM	Bromoform	Chloroform	DBCM	Methylene	Perchlorate	Perchlorate Result	
<b>Lockheed Martin Multiport Monitoring Wells</b>																
2720	LMW-1, Port 1 (120)	EPA 601/602	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	EPA 314.0	NS	
2721	LMW-1, Port 2 (170)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	ND (4.0)	
2722	LMW-1, Port 3 (220)	EPA 601/602	21	ND (0.5)	1.3	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	ND (4.0)	
2723	LMW-1, Port 4 (285)	EPA 601/602	17	ND (0.5)	1.3	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	5.9	
2724	LMW-1, Port 5 (340)	EPA 601/602	14	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	22	
2725	LMW-1, Port 6 (410)	EPA 601/602	15	ND (0.5)	ND (0.5)	0.51	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	71	
2726	LMW-1, Port 7 (480)	EPA 601/602	23	ND (0.5)	ND (0.5)	0.97	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	100	
2726	LMW-1, Port 7 (480) Duplicate	EPA 601/602	25	ND (0.5)	ND (0.5)	1.1	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	99	
2727	LMW-1, Port 8 (530)	EPA 601/602	17	ND (0.5)	ND (0.5)	0.96	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	78	
2728	LMW-1, Port 9 (610)	EPA 601/602	1.3	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	17	
2729	LMW-1, Port 10 (700)	EPA 601/602	0.91	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	13	
2730	LMW-2, Port 1 (125)	EPA 601/602	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	EPA 314.0	NS	
2731	LMW-2, Port 2 (180)	EPA 601/602	9.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	48	
2732	LMW-2, Port 3 (215)	EPA 601/602	11	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	52	
2733	LMW-2, Port 4 (280)	EPA 601/602	6.8	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	49	
2734	LMW-2, Port 5 (350)	EPA 601/602	11	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	60	
2735	LMW-2, Port 6 (395)	EPA 601/602	11	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	59	
2736	LMW-2, Port 7 (485)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	16	
2737	LMW-2, Port 8 (555)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	16	
2738	LMW-2, Port 9 (595)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	6.6	
2981	LMW-3, Port 1 (155)	EPA 601/602	2.1	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	42	
2982	LMW-3, Port 2 (230)	EPA 601/602	6.5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	52	
2983	LMW-3, Port 3 (300)	EPA 601/602	5.9	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	51	
2984	LMW-3, Port 4 (355)	EPA 601/602	3.7	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	24	
2985	LMW-3, Port 5 (440)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	4.9	
2986	LMW-3, Port 6 (495)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	ND (4.0)	
2987	LMW-3, Port 7 (585)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	ND (4.0)	
2987	LMW-3, Port 7 (585) Duplicate	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	ND (4.0)	
2988	LMW-3, Port 8 (640)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	ND (4.0)	
2990	LMW-6, Port 1 (175)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	4.3	
2991	LMW-6, Port 2 (230)	EPA 601/602	0.79	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	6.6	
2991	LMW-6, Port 2 (230) Duplicate	EPA 601/602	0.78	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	6.4	
2992	LMW-6, Port 3 (300)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	14	
2993	LMW-6, Port 4 (385)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	ND (4.0)	
2994	LMW-6, Port 5 (545)	EPA 601/602	2.8	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	16	
2995	LMW-6, Port 6 (625)	EPA 601/602	0.68	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	10	
2997	LMW-7, Port 1 (105)	EPA 601/602	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	EPA 314.0	NS	
2998	LMW-7, Port 2 (260)	EPA 601/602	1.7	ND (0.5)	ND (0.5)	5.1	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	12	
2999	LMW-7, Port 3 (355)	EPA 601/602	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	EPA 314.0	13	
3000	LMW-7, Port 4 (425)	EPA 601/602	ND (0.5)	ND												

**TABLE 3**  
**ANNUAL SAMPLING PROGRAM**  
**FIELD PARAMETER SUMMARY**

Lockheed Martin Well Designation	Well Name	Sample Date	Sample Number Identification	Time	pH	Specific Conductivity (mS/cm)	Temperature (°C)	Turbidity (NTU)	Redox (mV)	Dissolved Oxygen (mg/l)
<b>Lockheed Martin Multipoint Monitoring Wells</b>										
2720	LMW-1, Port 1 (120)	NS	NS	NS	NS	NS	NS	NS	NS	NS
2721	LMW-1, Port 2 (170)	7/28/2003	AS-1	12:20	6.47	597	23.6	2	15.4	7.28
2722	LMW-1, Port 3 (220)	7/28/2003	AS-2	13:29	7.07	584	24.3	12	7.99	10.01
2723	LMW-1, Port 4 (285)	7/28/2003	AS-3	13:52	7.74	531	25.4	0	8.06	9.83
2724	LMW-1, Port 5 (340)	7/28/2003	AS-4	14:10	7.57	472	25.2	0	7.91	11.4
2725	LMW-1, Port 6 (410)	7/28/2003	AS-6	14:43	7.75	437	23.8	0	7.2	12.2
2726	LMW-1, Port 7 (480)	7/28/2003	AS-7	15:15	7.73	399	24.5	17	7.91	15.6
2726	LMW-1, Port 7 (480) Duplicate	7/28/2003	AS-8	15:15	7.73	399	24.5	17	7.91	15.6
2727	LMW-1, Port 8 (530)	7/28/2003	AS-9	16:10	8.44	319	23.3	1	7.98	13.61
2728	LMW-1, Port 9 (610)	7/28/2003	AS-10	16:37	8.06	293	24.2	6	7.94	19.99
2729	LMW-1, Port 10 (700)	7/28/2003	AS-11	17:10	8.29	267	22.4	32	19.99	7.73
2730	LMW-2, Port 1 (125)	NS	NS	NS	NS	NS	NS	NS	NS	NS
2731	LMW-2, Port 2 (180)	7/29/2003	AS-22	16:15	8.07	549	25	4	7.92	13.39
2732	LMW-2, Port 3 (215)	7/29/2003	AS-23	16:42	8.02	521	23.8	3	7.78	14.8
2733	LMW-2, Port 4 (280)	7/29/2003	AS-24	17:02	8.05	436	23.4	3	7.76	14.3
2734	LMW-2, Port 5 (350)	7/30/2003	AS-25	9:25	6.91	438	22.7	1	7.35	11.15
2735	LMW-2, Port 6 (395)	7/30/2003	AS-26	9:56	7.65	444	23.4	1	7.4	10.45
2736	LMW-2, Port 7 (485)	7/30/2003	AS-27	10:19	7.37	453	23.7	0	7.3	11.27
2737	LMW-2, Port 8 (555)	7/30/2003	AS-28	10:54	7.56	415	24	0	7.35	16.1
2738	LMW-2, Port 9 (595)	7/30/2003	AS-29	11:31	7.59	358	24.1	2	7.72	13.36
2981	LMW-3, Port 1 (155)	7/29/2003	AS-12	10:10	6.94	611	23.8	6	7.33	10.01
2982	LMW-3, Port 2 (230)	7/29/2003	AS-13	10:35	7.64	526	23	1	7.26	12.71
2983	LMW-3, Port 3 (300)	7/29/2003	AS-14	10:59	7.74	625	23.7	0	7.32	14.17
2984	LMW-3, Port 4 (355)	7/29/2003	AS-15	11:21	7.62	498	23.4	3	7.24	13.44
2985	LMW-3, Port 5 (440)	7/29/2003	AS-17	11:57	7.64	545	24.1	3	7.24	12.34
2986	LMW-3, Port 6 (495)	7/29/2003	AS-18	12:27	7.80	531	25.4	0	7.45	12.06
2987	LMW-3, Port 7 (585)	7/29/2003	AS-19	13:04	7.71	531	26	2	7.36	14.4
2987	LMW-3, Port 7 (585) Duplicate	7/29/2003	AS-20	13:04	7.71	531	26	2	7.36	14.4
2988	LMW-3, Port 8 (640)	7/29/2003	AS-21	13:55	8.14	298	24.1	1	7.36	18.71
2990	LMW-6, Port 1 (175)	7/30/2003	AS-30	13:14	7.36	504	27.7	1	7.18	8.01
2991	LMW-6, Port 2 (230)	7/30/2003	AS-31	13:31	7.43	496	25.5	3	7.38	9.01
2991	LMW-6, Port 2 (230) Duplicate	7/30/2003	AS-32	13:31	7.43	496	25.5	3	7.38	9.01
2992	LMW-6, Port 3 (300)	7/30/2003	AS-33	14:09	7.48	482	24.6	1	7.9	10.33
2993	LMW-6, Port 4 (385)	7/30/2003	AS-35	14:44	7.64	298	24.1	1	7.99	10.01
2994	LMW-6, Port 5 (545)	7/30/2003	AS-36	15:19	7.51	389	23.5	0	8.01	12.61
2995	LMW-6, Port 6 (625)	7/30/2003	AS-37	15:56	7.61	270	24.3	0	7.91	14.13
2997	LMW-7, Port 1 (105)	NS	NS	NS	NS	NS	NS	NS	NS	NS
2998	LMW-7, Port 2 (260)	7/31/2003	AS-38	9:51	7.36	628	24.3	0	7.2	12.72
2999	LMW-7, Port 3 (355)	7/31/2003	AS-39	10:20	7.69	580	24.5	4	7.01	11.34
3000	LMW-7, Port 4 (425)	7/31/2003	AS-40	10:51	7.88	548	26.1	0	7.16	11.01
3001	LMW-7, Port 5 (515)	7/31/2003	AS-41	11:30	7.71	710	26.8	0	7.25	10.61
3001	LMW-7, Port 5 (515) Duplicate	7/31/2003	AS-42	11:30	7.71	710	26.8	0	7.25	10.61
3002	LMW-7, Port 6 (600)	7/31/2003	AS-43	12:04	7.64	764	25.9	8	7.18	12.83
3003	LMW-7, Port 7 (670)	7/31/2003	AS-45	12:45	8.24	321	25.6	1	7.58	11.35
<b>Lockheed Martin Piezometers</b>										
3086	LMP-1	8/1/2003	AS-46	12:25	7.48	722	22	2	NA	4.67
3087	LMP-2	8/1/2003	AS-47	17:28	7.80	403	20.8	1	NA	19.99
3089	LMP-3	8/1/2003	AS-49	18:40	9.32	315	24.1	0	NA	2.17

**TABLE 4**  
**WSCP PRODUCTION WELL SAMPLING PROGRAM**  
**AUGUST 2003 DATA RESULTS**

Lockheed Martin Well Designation	Well Name	Sample Date	Perchlorate (ug/L) Dei Mar	TCE (ug/L) Dei Mar
<b>City of Loma Linda</b>				
3106	Mountain View #3 <sup>c</sup>	NS	NR	NR
3171	Mountain View #4 <sup>c</sup>	NS	NR	NR
3175	Mountain View #5 <sup>b</sup>	8/4/2003	ND (4.0)	ND (0.5)
693	Richardson #1 <sup>c</sup>	8/4/2003	5.6	ND (0.5)
707	Richardson #3 <sup>c</sup>	NS	NR	NR
3132	Richardson #4 <sup>c</sup>	NS	NR	NR
<b>City of Loma Linda Water System Sampling Points</b>				
2967	Mountain View Blend - Lawton <sup>a</sup>	8/5/2003	ND (4.0)	ND (0.5)
2968	Richardson Blend <sup>a</sup>	8/5/2003	ND (4.0)	ND (0.5)
<b>Mountain View Power</b>				
554	SCE #2 (AUX) <sup>c</sup>	8/5/2003	ND (4.0)	ND (0.5)
<b>Loma Linda University</b>				
267	LL Univ Anderson #2 <sup>b</sup>	NS	NR	NR
717	LL Univ Anderson #3 <sup>b</sup>	8/5/2003	5.2	NR
<b>City of Riverside (Gage System)</b>				
252	Gage #26-1 <sup>bcd</sup>	8/4/2003	7.3	5.5
258	Gage #27-1 <sup>bcd</sup>	NS	NR	NR
259	Gage 27-2 <sup>b</sup>	NS	NR	NR
260	Gage 29-1 <sup>b</sup>	8/4/2003	9.3	NR
219	Gage 29-2 <sup>bde</sup>	NS	NR	NR
220	Gage 29-3 <sup>bde</sup>	NS	NR	NR
218	Gage 30-1 <sup>c</sup>	NS	NR	NR
214	Gage 31-1 <sup>b</sup>	8/4/2003	10	NR
215	Gage 46-1 <sup>b</sup>	NS	NR	NR
253	Gage 51-1 <sup>bde</sup>	NS	NR	NR
216	Gage 56-1 <sup>c</sup>	NS	NR	NR
257	Gage 66-1 <sup>b</sup>	8/4/2003	20	2.4
257	Gage 66-1 <sup>b</sup> (Duplicate)	8/4/2003	19	2.3
644	Gage 92-1 <sup>bde</sup>	8/4/2003	29	2.8
641	Gage 92-2 <sup>c</sup>	NS	NR	NR
642	Gage 92-3 <sup>c</sup>	NS	NR	NR
3091	Gage 98-1 <sup>c</sup>	NS	NR	NR
<b>City of Riverside (Waterman System)</b>				
273	Hunt #6 <sup>b</sup>	NS	NR	NR
271	Hunt #10 <sup>b</sup>	NS	NR	NR
272	Hunt #11 <sup>b</sup>	8/4/2003	8.3	NR
285	Gamer #1 <sup>b</sup>	8/4/2003	ND (4.0)	NR
286	Gamer #2 <sup>b</sup>	NS	NR	NR
284	Gamer #5 <sup>b</sup>	NS	NR	NR
1908	Gamer #6 <sup>b</sup>	8/4/2003	4.1	NR
2576	Gamer #7 <sup>b</sup>	8/4/2003	5.1	NR
254	Raub #2 <sup>b</sup>	NS	NR	NR
224	Raub #3 <sup>b</sup>	NS	NR	NR
255	Raub #4 <sup>b</sup>	NS	NR	NR
222	Raub #5 <sup>b</sup>	8/4/2003	4.3	NR
666	Raub #6 <sup>b</sup>	NS	NR	NR
665	Raub #8 <sup>b</sup>	8/4/2003	ND (4.0)	NR
202	Scheuer <sup>b</sup>	NS	NR	NR
282	Stiles <sup>b</sup>	NS	NR	NR
249	Warren #1 <sup>b</sup>	8/4/2003	6.5	NR
247	Warren #4 <sup>b</sup>	NS	NR	NR

**TABLE 4**  
**WSCP PRODUCTION WELL SAMPLING PROGRAM**  
**AUGUST 2003 DATA RESULTS**

City of Riverside Water System Sampling Points				
2946	Iowa Booster (Waterman) <sup>a</sup>	8/5/2003	4.0	ND (0.5)
2947	Gage Delivery (Gage) <sup>a</sup>	NS	NS	NS
3177	Gage Lemona (Gage) <sup>a</sup>	8/5/2003	5.2	ND (0.5)
2948	7th & Chicago (Reservoir) <sup>a</sup>	8/5/2003	5.4	ND (0.5)
2948	7th & Chicago (Reservoir) <sup>a</sup> Duplicate	8/5/2003	ND (4.0)	ND (0.5)
3018	Gage Arlington <sup>a</sup>	8/5/2003	5.8	NR
City of Redlands				
542	COR Church St <sup>b</sup>	8/4/2003	6.9	NR
542	COR Church St <sup>b</sup> (Duplicate)	8/4/2003	6.3	NR
29	COR Orange St <sup>c</sup>	NS	NR	NR
74	COR Rees <sup>b</sup>	8/4/2003	NR	ND (0.5)
1029	COR Mission <sup>b</sup>	NS	NR	NR
65	COR #31A <sup>b</sup>	NS	NR	NR
265	COR #34 <sup>b</sup>	NS	NR	NR
71	COR #35 <sup>b</sup>	NS	NR	NR
75	COR #37 <sup>b</sup>	NS	NR	NR
2673	COR #38 <sup>c</sup>	NS	NR	NR
Riverside Highlands Water Company				
1354	RHWC #2 <sup>b</sup>	8/5/2003	8.2	NR
1361	RHWC #5 <sup>b</sup>	8/5/2003	ND (4.0)	NR
383	RHWC #18 <sup>b</sup>	NS	NR	NR
Other Wells - Agricultural				
82	New York Street Well <sup>b</sup>	NS	NR	NR
81	COR #41 <sup>b</sup>	NS	NR	NR
3174	VA Hospital Well <sup>b</sup>	8/5/2003	16	NR

Notes:

ND(4) = Not detected at the specified limit.

NR = Not Required Analysis

NS = Not Sampled

TCE = Trichloroethane

Perchlorate analyzed using EPA Method 344.0

TCE analyzed using EPA Method 502.2

a = Well/sample point sampled on monthly basis, if active

b = Well sampled once every two months, if active

c = Well sampled or Semiannual basis, if active

d = TCE treatment is installed

e = Perchlorate treatment is installed

## **FIGURES**

**PARTIALLY SCANNED  
OVERSIZE ITEM(S)**

See Document # 2051174  
for partially scanned image(s).

**FIG. I**

For complete version of oversize document(s),  
see paper copy.

Lockheed Martin Corporation  
Corporate Energy, Environment, Safety & Health  
2550 North Hollywood Way, Suite 301  
Burbank, CA 91505  
Facsimile 818-847-0256

**LOCKHEED MARTIN** 

April 26, 2004

Mr. Gerard J. Thibeault  
Executive Officer  
California Regional Water Quality Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, CA 92501-3339

**Reference: Regional Water Quality Control Board Cleanup and Abatement Orders No. 97-58 (as amended by Order No. 01-56) and Order No. 94-37**

Dear Mr. Thibeault:

In accordance with the approved Water Supply Contingency Plan, enclosed please find one copy of the report entitled: "*Plume Characterization; Annual Sampling Program – 2003; Crafton-Redlands Plume Project*" dated April 7, 2004. This report was prepared by Earth Tech for Lockheed Martin Corporation. The report presents data from the required annual sampling event to update the characterization of the TCE and perchlorate plumes.

If you have any questions or comments, please contact Bob Simpson at 818-847-0256.

Sincerely,



Thomas D. Blackman, R.G., C.HG.  
Technical Project Manager

Enclosure

Mr. Gerard J. Thibeault

April 26, 2004

Page 2

cc: Dana Beaman, LLU  
DOHS, San Bernardino  
Wesley Danskin, US Geological Survey  
Greg Snyder, COLL  
Tom Crowley, San Bernardino Valley Water Conservation District  
Doug Headrick, City of Redlands  
Ross Lewis, Gage Canal Company  
Kevin Mayer, US EPA  
Steve Mains, Western Municipal Water District  
Don Hough, Riverside Highland Water Company  
Phil Mook, USAF, AFBCA/DD  
Zahra Panahi, City of Riverside  
Bob Reiter, San Bernardino Valley Municipal Water District  
Steve Williams, DOHS (San Diego)  
Alain Sharp, Earth Tech  
Bill Bryden, City of San Bernardino  
Dieter Wirtzfeld, City of Riverside  
Owen Lu, City of Riverside

Mr. Gerard J. Thibeault

April 26, 2004

Page 3

Bc: Gallop, Johnson & Neuman  
Interco Corporate Tower  
101 S. Hanley Road  
St. Louis MO 63105  
Attn: Michael Re

Highland Supply Corporation  
111 Sixth Street  
Highland, IL 62249  
Attn: Donald E. Weder

Seven W. Enterprises, Inc.  
1500 Crafton Ave., PO Box 111  
Redlands, CA 92373-1730  
Attn: Janet M. Weder

Seven W. Enterprises, Inc.  
1111 Sixth Street  
Highland, IL 62249  
Attn: Wanda M. Weder

Payne & Fears LLP  
Jamboree Center  
4 Park Plaza, Suite 1100  
Irvine, CA 92614  
Attn: Alan G. Ross

Mr. Gerard J. Thibeault

April 26, 2004

Page 4

Bc: Peter Bokor, Earth Tech  
Doug Goins, LMC (Bethesda)  
Ron Helgerson, LMC (Bethesda)  
Jim Norman, Geotrans/Tetra Tech  
Gail Rymer, LMC (Bethesda)  
Bob Simpson, LMC (Burbank)  
William Um, Howrey Simon Arnold & White LLP

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**PARTIALLY SCANNED  
OVERSIZE ITEM(S)**

See Document # 2051174  
for partially scanned image(s).

*FIG. 2*

For complete version of oversize document(s),  
see paper copy.

**ATTACHMENT A**

**FIELD SAMPLE FORMS**  
**(Available Upon Request)**

**ATTACHMENT B**

**CHAIN-OF-CUSTODY RECORDS AND  
LABORATORY DATA SHEETS AND LEVEL III MODIFIED  
QUALITY ASSURANCE/QUALITY CONTROL DOCUMENTATION  
(Available Upon Request)**

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